FluWatch

Public Health Agency of Canada | Agence de la santé publique du Canada

July 29 to August 11, 2012 (Weeks 31 & 32)

Overall Influenza Summary

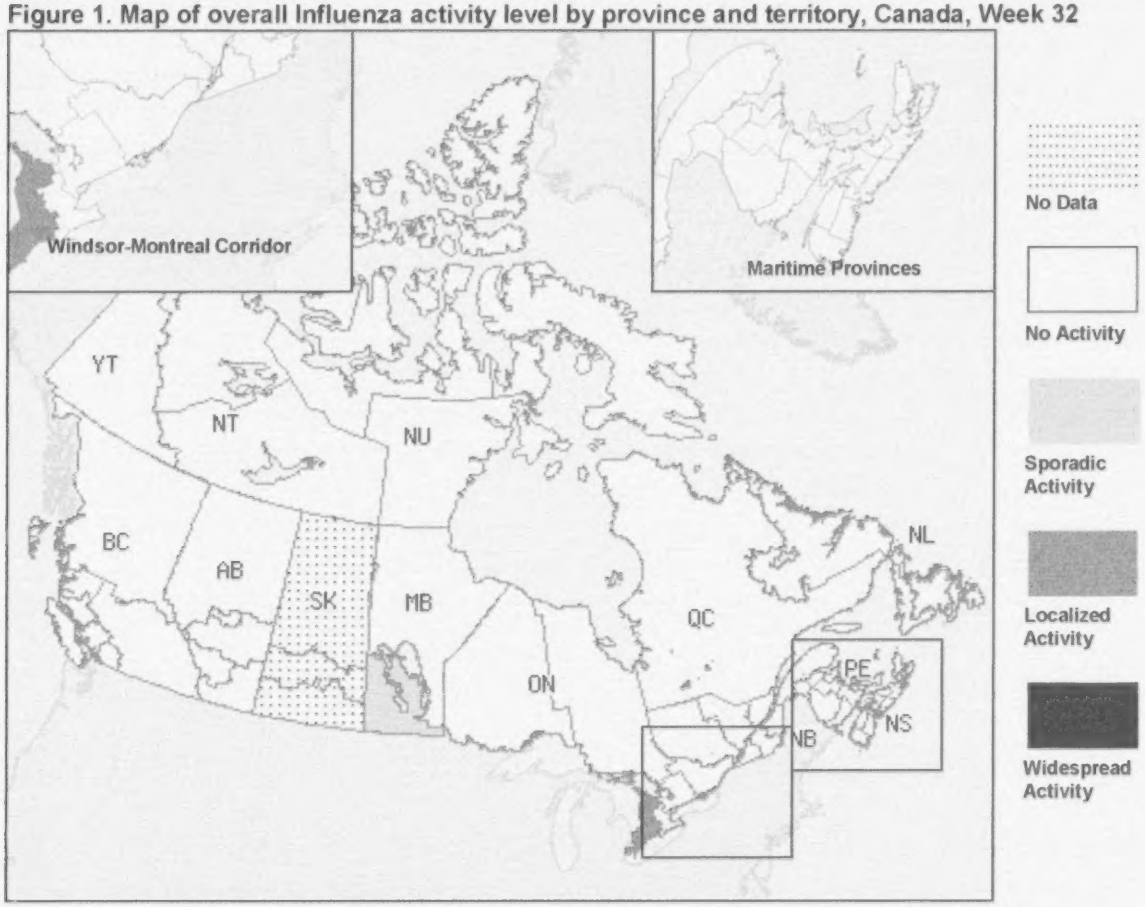
- Influenza activity in Canada remains low and is at inter-seasonal levels
- In weeks 31 and 32, a total of 9 laboratory detections of influenza were reported of which 77.8% were for influenza A viruses (57.1% - A(H3) and 42.9% - unsubtyped) and 22.2% for influenza B viruses
- Only 1 region reported localized activity (ON) and 1 region reported sporadic activity (MB) in week 32. No new outbreaks of influenza/ILI were reported
- Nine influenza-associated hospitalizations (5 in those <20 and 4 in those ≥20) were reported over the two-week period (through aggregate surveillance)
- The ILI consultation rate in weeks 31 and 32 were within the expected levels for this time of year

NOTE: Bi-weekly reports will continue until October 12, 2012. However, laboratory detections reported through the RVDSS and influenza activity level maps will be updated weekly on the FluWatch website.

Influenza Activity (geographic spread) and Outbreaks

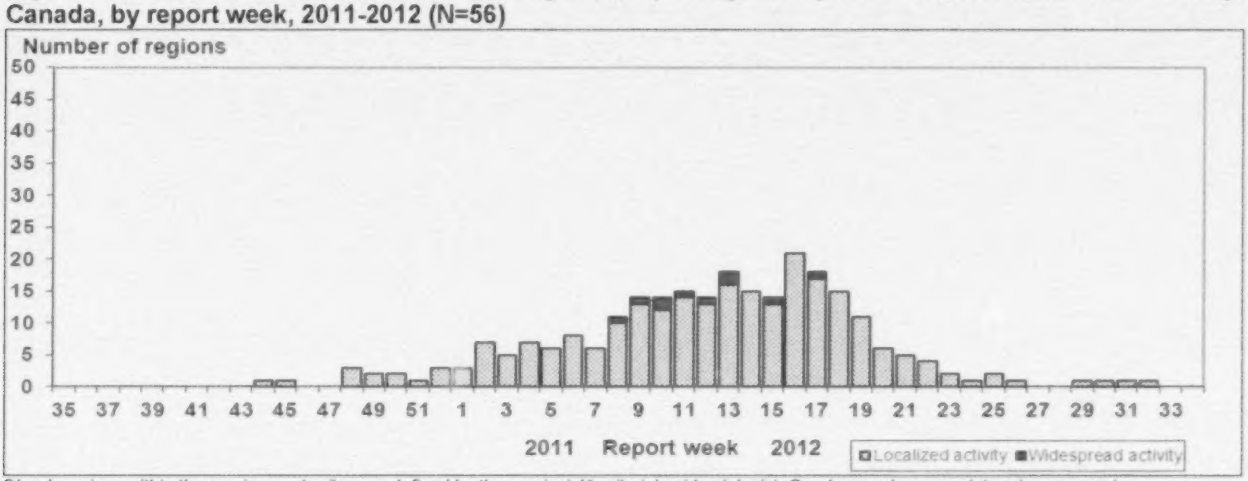
In week 31, 1 region (within ON) reported localized activity and 1 surveillance region (within QC) reported sporadic activity. In week 32, 1 region (within ON) reported localized influenza activity and 1 region (within MB) reported sporadic activity (see Figure 1). Note that no data was received from AB, SK, PEI & NS for week 31 and no data was received from SK & PEI for week 32. No new outbreaks were reported in weeks 31 and 32 (Figure 3).

Figure 1. Map of overall Influenza activity level by province and territory, Canada, Week 32



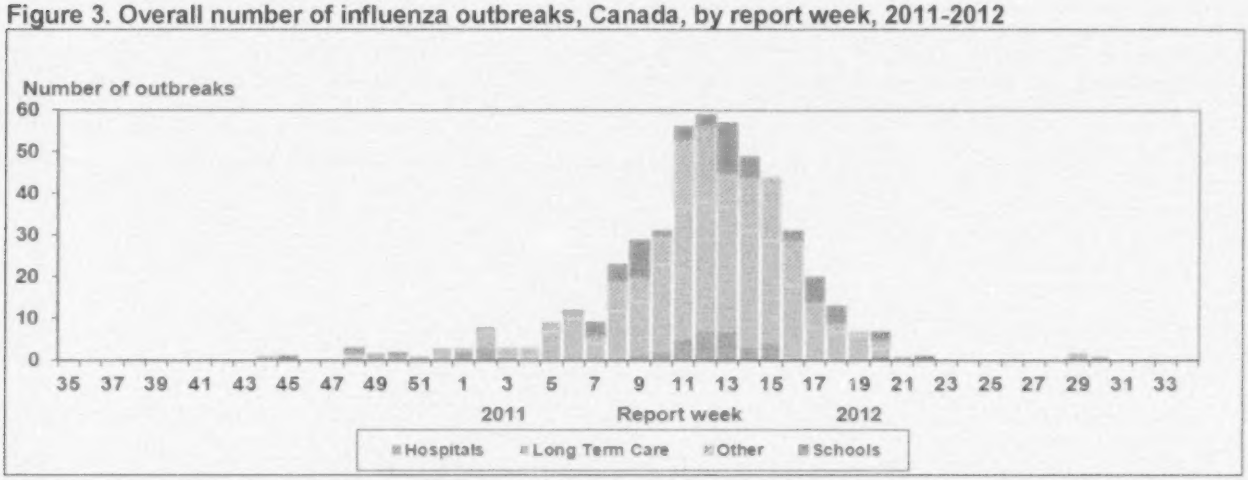
Note: Influenza activity levels, as represented on this map, are assigned and reported by Provincial and Territorial Ministries of Health, based on laboratory confirmations, sentinel ILI rates (see graphs and tables) and reported outbreaks. Please refer to detailed definitions on the last page. For areas where no data is reported, late reports from these provinces and territories will appear on the FluWatch website.

Figure 2. Number of influenza surveillance regions† reporting widespread or localized influenza activity, Canada, by report week, 2011-2012 (N=56)



0† sub-regions within the province or territory as defined by the provincial/territorial epidemiologist. Graph may change as late returns come in.

Figure 3. Overall number of influenza outbreaks, Canada, by report week, 2011-2012



Influenza and Other Respiratory Virus Detections

The proportion of positive influenza tests continued to decline and was 0.6% in week 31 and 0.3% in week 32 (Figure 4 & 5). The proportion of positive detections for influenza A in week 31 was 0.5% and 0.1% in week 32. The proportion of positive detections for influenza B viruses was 0.1% in weeks 31 and 32.

Cumulative to date of influenza virus detections by type/subtype is as follows: 46.6% influenza A (41.5% - A(H3); 18.7% - A(H1N1)pdm09; 39.8% - unsubtyped) and 53.4% influenza B (Table 1).

Detailed information on age and type/subtype were received on 10,275 cases to date this season (Table 2). The proportions of cases by age group are as follows: 20.5% were < 5 years; 18.1% were between 5-19 years; 22.0% were between 20-44 years; 15.6% were between 45-64 years of age; 23.5% were >= 65 years; and 0.3% with age unknown. The largest proportions of influenza A cases were between 20-44 years of age (25.6%) and those ≥ 65 years of age (25.4%). The largest proportions of influenza B cases were in those under 20 years of age (46.3%) and those ≥ 65 years of age (21.7%).

The percentage positive for rhinovirus detections was similar to previous weeks (17.7% & 18.8% in weeks 31 & 32 respectively) and remains the highest compared to the other respiratory viruses. The percentage positive for parainfluenza viruses declined to 3.2% in week 32. The percentage positive for the other respiratory viruses in week 32 remained low: RSV-0.6%; adenovirus-1.8%; hMPV-0.3%; and coronavirus-0.0% (Figure 5). For more details, see the weekly Respiratory Virus Detections in Canada Report.

Table 1. Weekly & Cumulative numbers of positive influenza specimens by Provincial Laboratories, Canada, 2011-2012

Reporting provinces	July 29 to August 11, 2012						Cumulative (August 28, 2011 to August 11, 2012)					
	Influenza A					B	Influenza A					B
	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total	A Total	A(H1)	A(H3)	Pand H1N1	A (UnS)*	Total
BC	3	0	3	0	0	0	671	0	536	107	28	151
AB	0	0	0	0	0	0	1349	0	1036	259	54	310
SK	0	0	0	0	0	0	520	0	319	50	151	103
MB	0	0	0	0	0	1	77	0	12	9	56	245
ON	4	0	1	0	3	0	968	0	265	492	211	2760
QC	0	0	0	0	0	1	1854	0	74	97	1683	2251
NB	0	0	0	0	0	0	103	0	32	36	35	336
NS	0	0	0	0	0	0	16	0	11	1	4	93
PE	0	0	0	0	0	0	3	0	2	1	0	51
NL	0	0	0	0	0	0	118	0	68	10	40	212
Canada	**7**	**0**	**4**	**0**	**3**	**2**	**5679**	**0**	**2355**	**1062**	**2262**	**6512**

*Unsubtyped: The specimen was typed as influenza A, but no test for subtyping was performed. Specimens from NT, YT, and NU are sent to reference laboratories in other provinces. Note: Weekly data is based on week of positive lab detection. Cumulative data includes updates to previous weeks; due to reporting delays, the sum of weekly report totals do not add up to cumulative totals.

Table 2. Weekly & Cumulative numbers of positive influenza specimens by age groups reported through case-based laboratory reporting, Canada, 2011-2012*

Age groups	Weekly (July 29 to August 11, 2012)					Cumulative (Aug. 28, 2011 to Aug. 11, 2012)				
	Influenza A				B	Influenza A				B
	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total	A Total	Pandemic H1N1	A/H3N2	A unsubtyped	Total
<5	0	0	0	0	0	994	234	346	414	1107
5-19	0	0	0	0	0	568	86	287	195	1296
20-44	0	0	0	0	0	1301	292	480	529	959
45-64	0	0	0	0	0	905	186	316	403	701
65+	1	0	1	0	0	1290	70	774	446	1129
Unknown	0	0	0	0	0	22	6	15	1	3
Total	1	0	1	0	0	5080	874	2218	1988	5195

*Please note that this table reflects the number of specimens for which demographic information was reported. These represent a subset of all positive influenza cases reported. Delays in the reporting of data may cause data to change retrospectively.

Figure 4. Influenza tests reported and percentage of tests positive, Canada, by report week, 2011-2012

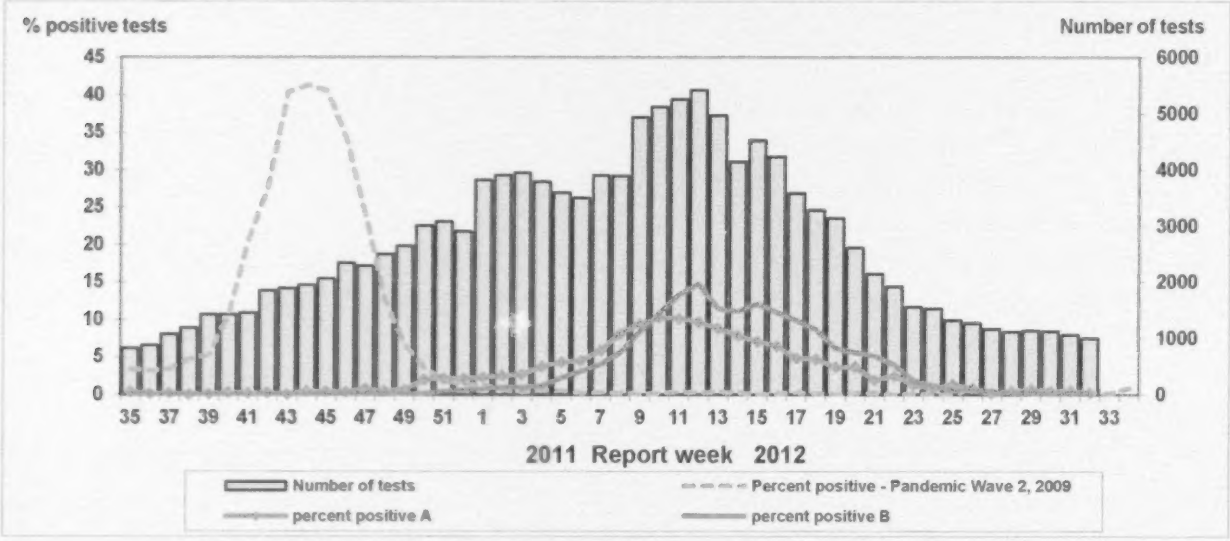
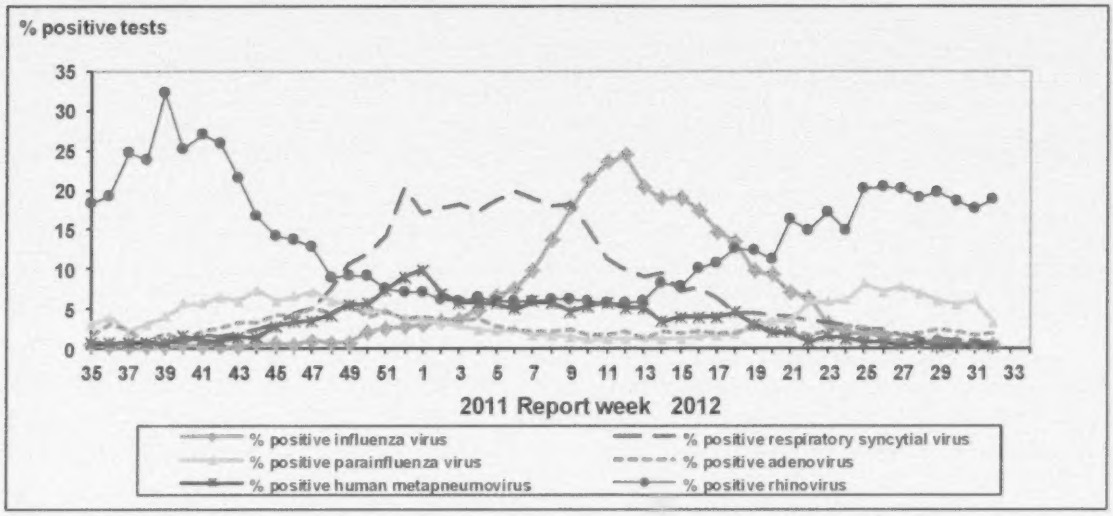


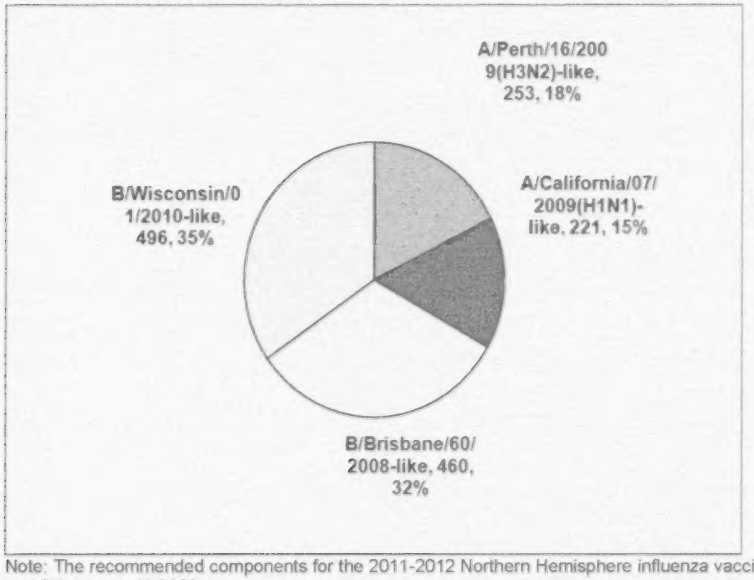
Figure 5. Percent positive influenza tests, compared to other respiratory viruses, Canada, by reporting week, 2011-2012



Influenza Strain Characterizations

Since the start of the season, the National Microbiology Laboratory (NML) has antigenically characterized 1,430 influenza viruses (253 A/H3N2, 221 A/H1N1 and 956 B). Of the 253 A/H3N2 viruses (from BC, AB, SK, MB, ON, QC, NB, NS, PEI & NT), 91.7% (232) were antigenically similar to A/Perth/16/2009 while 8.3% (21) viruses showed reduced titers with antiserum produced against A/Perth/16/2009. Of the 221 A/H1N1 viruses characterized (from BC, AB, SK, MB, ON, QC & NB), 97.7% (216) were antigenically similar to A/California/07/2009 and 2.3% (5) viruses tested showed reduced titer with antiserum produced against A/California/07/2009. Of the 956 influenza B viruses characterized, 48.1% (460) (from BC, AB, SK, MB, ON, QC, NB, NS & NL) were antigenically similar to the vaccine strain B/Brisbane/60/2008 (Victoria lineage); however 1 virus out of the 460 tested showed reduced titer with antiserum produced against B/Brisbane/60/2008. The remaining 51.9% (496) of the influenza B viruses (from BC, AB, SK, MB, ON, QC, NB, NS, NT & NU) were antigenically related to the reference virus B/Wisconsin/01/2010-like, which belongs to the Yamagata lineage. (Figure 6)

Figure 6. Influenza strain characterizations, Canada, 2011-2012, N = 1,430



Note: The recommended components for the 2011-2012 Northern Hemisphere influenza vaccine include: A/Perth/16/2009 (H3N2), A/California/7/2009 (H1N1) and B/Brisbane/60/2008.

Antiviral Resistance

Since the beginning of the season, NML has tested 1,468 influenza viruses for resistance to oseltamivir (by phenotypic assay and/or sequencing) and 1,467 for zanamivir (by phenotypic assay) and it was found that all viruses tested were susceptible to oseltamivir and zanamivir. A total of 794 influenza A viruses (438 H3N2 and 356 H1N1) were tested for amantadine resistance and all but 1 influenza A(H3N2) virus tested were resistant. (Table 3)

Table 3. Antiviral resistance by influenza virus type and subtype, Canada, 2011-2012

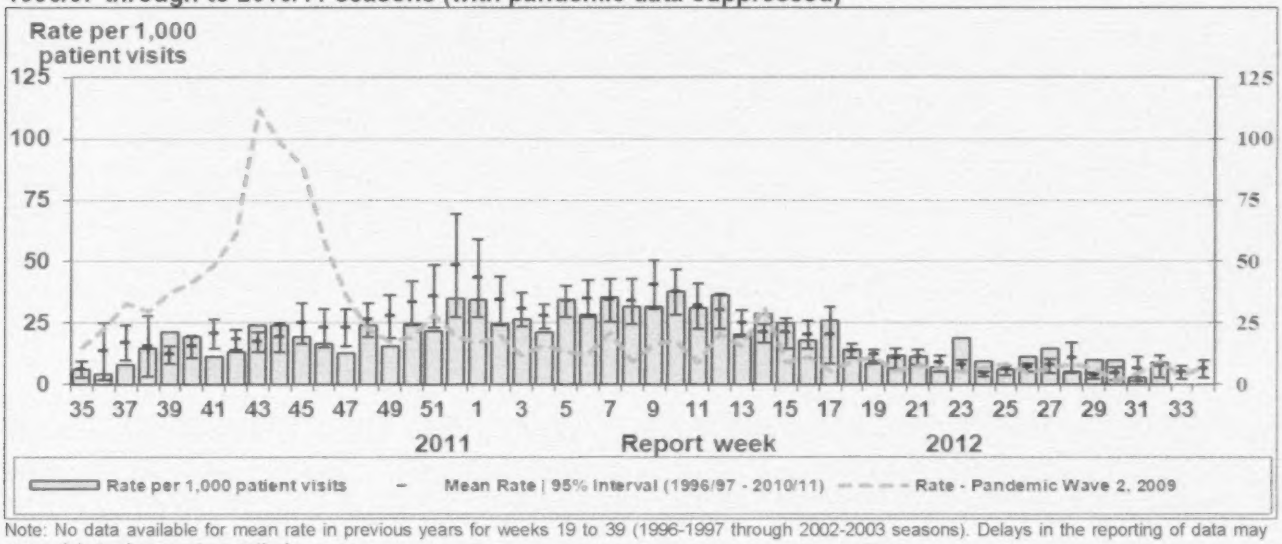
Virus type and subtype	Oseltamivir		Zanamivir		Amantadine	
	# tested	# resistant (%)	# tested	# resistant (%)	# tested	# resistant (%)
A (H3N2)	252	0	251	0	438	437 (99.8%)
A (H1N1)	256	0	256	0	356	356 (100%)
B	960	0	960	0	NA*	NA*
TOTAL	1468	0	1467	0	794	793 (99.9%)

* NA – not applicable

Influenza-like Illness (ILI) Consultation Rate

The national ILI consultation rate declined in week 31 to 2.6 ILI consultations per 1,000 patient visits and increased in week 32 to 8.6 per 1,000 visits; both rates were within the expected levels for this time of year (Figure 7). The highest consultation rates by age group were observed in those ≤65 years of age in week 31 (5.0/1,000) and in children <5 years (20.7/1,000) and between 5-19 years (20.4/1,000) in week 32.

Figure 7. Influenza-like illness (ILI) consultation rates, Canada, by report week, 2011-2012 compared to 1996/97 through to 2010/11 seasons (with pandemic data suppressed)



Note: No data available for mean rate in previous years for weeks 19 to 39 (1996-1997 through 2002-2003 seasons). Delays in the reporting of data may cause data to change retrospectively.

Severe Respiratory Illness Surveillance

Paediatric Influenza Hospitalizations and Deaths (IMPACT)

The Immunization Monitoring Program Active (IMPACT) network is no longer reporting new laboratory-confirmed influenza-associated paediatric cases (16 years of age and under) until the Fall of 2012.

Since the start of the 2011-2012 influenza season, a total of 591 cases were reported by IMPACT of which 41.8% (247) were due to influenza A and 58.2% (344) due to influenza B. Subtype information was available for 38.5% (95) of the influenza A cases: 37.9% (36) were due to H1N1 infection and 62.1% (59) were due to H3N2. The proportion of

cases by age group is as follows: 14.4% among infants <6 months of age; 20.5% among children 6-23 months of age; 30.3% were between 2-4 years; 24.2% were between 5-9 years; and 10.7% were between 10-16 years. To date this season, 6 influenza-associated paediatric deaths have been reported through the IMPACT network; 83% (5) were associated with influenza B infection.

Note: The number of hospitalizations reported through IMPACT represents a subset of all influenza-associate paediatric hospitalizations in Canada; therefore, the number of hospitalizations included in this report may differ from those reported by other Provincial and Territorial Health Authorities.

Influenza Hospitalizations and Deaths (Aggregate Surveillance System)
In weeks 31 and 32, a total of 9 new laboratory-confirmed influenza-associated hospitalizations were reported: 55.6% were in those < 20 years of age (5) and 44.4% (4) were in those ≥20 years of age; 77.8% (7) were due to influenza A and 22.2% (2) were due to influenza B. All of the hospitalizations were reported from ON. No new ICU admissions were reported in weeks 31 and 32; however, 1 influenza A (unsubtyped) associated death was reported (ON) and was in a person between the ages of 20-44 years of age.

To date this season, 1,867 influenza-associated hospitalizations have been reported from 7 provinces (AB, SK, MB, ON, NS, PE & NL) and 2 territories (YT & NT); 38.9% (727) were in those < 20 years of age, 61.0% (1,138) in those ≥ 20 years of age, and 0.1% (2) of unknown age. The largest proportion of cases was observed in those ≥ 65 years of age (33.5%). Influenza B (57.1%) continues to be the predominant influenza type among hospitalized cases compared to influenza A; of the influenza A hospitalizations where subtype was known, influenza A(H3N2) predominated (60.3%). There have been 81 hospitalizations requiring ICU admission reported (from AB, SK, MB, NS & NL) of which 28.6% were in those < 20 years of age and 70.4% were in those ≥ 20 years of age. To date this season, 104 influenza-associated deaths have been reported (from AB, SK, MB, ON & NS) of which 1.0% were of unknown age, 6.7 % were among those < 20 years of age and 92.3% in those ≥ 20 years of age. Of the adult deaths, 74.0 % were in those ≥ 65 years of age.

Note: Some of the hospitalizations and deaths reported in those ≤ 16 years of age may also have been reported in the IMPACT summary above if the hospitalization or death occurred in one of the 12 IMPACT hospitals. The reason for hospitalization or cause of death does not have to be attributable to influenza in order to be reported. Influenza-associated hospitalizations are not reported to PHAC by the following Provinces: BC, & QC. Only hospitalizations that require intensive medical care are reported by SK. ICU admissions are not reported in ON.

International Influenza Updates

WHO: Most countries in the northern temperate zone have stopped weekly reporting or moved over to out of season surveillance schedules. In the tropical zone, the countries that have reported notable influenza activity were Brazil, Cuba, Ecuador, El Salvador, and Panama in the Americas (influenza A(H1N1)pdm09 and type B); Ghana and Madagascar in sub-Saharan Africa (influenza A(H3N2)); southern China, Singapore and Viet Nam in Asia (A(H3N2) in China and Viet Nam, A(H3N2), A(H1N1)pdm09, and B in Singapore). The influenza season has continued in most temperate countries of the southern hemisphere for which there is data and appears to have peaked in Chile and South Africa, where many indicators have recently begun to decline. In contrast, very low numbers of detections have been reported throughout the last several weeks in Argentina. Rates of disease have continued to increase across Australia and New Zealand. Influenza A(H3N2) viruses were the most commonly reported type/sub-type in recent weeks across the Southern Hemisphere temperate region in Chile, South Africa, Australia, and New Zealand. However, the distribution is not uniform across Australia where influenza type B accounts for a significant portion of viruses detected in the Western Australia, Northern Territory, and Queensland. Influenza A(H1N1)pdm09 is the most common influenza virus detected in Paraguay as well as neighboring areas of southern Brazil and the Plurinational State of Bolivia. *World Health Organization influenza update*

United States: The proportion of tests positive for influenza viruses increased slightly compared to previous weeks and was 7.0% in week 31. Of the positive influenza detections reported during week 31, the majority (75%) were positive for influenza A viruses. Of the influenza A viruses for which subtype information was available (15), all (100%) were influenza A(H3) viruses. All other indicators of influenza activity remained low. *Centers for Disease Control and Prevention seasonal influenza report*

Novel Influenza A Virus: From July 12 through August 9, 2012, a total of 153 infections with influenza A (H3N2) variant (H3N2v) viruses have been reported in four states: Hawaii (1), Illinois (1), Indiana (120), and Ohio (31). So far during the current outbreaks, two persons have been hospitalized as a result of their illness; no deaths have occurred. At this time no ongoing human-to-human transmission has been identified and all cases have reported contact with swine prior to illness onset. Public health and agriculture officials are investigating the extent of disease among humans and swine, and additional cases are likely to be identified as the investigation continues. Additional information on these cases can be found in the Morbidity and Mortality Weekly Report.

Europe: In week 32, influenza activity continues to be at out-of-season levels throughout the European Region. None of the 19 samples collected from sentinel sources were positive for influenza virus; 2 samples from non-sentinel sources were influenza positive for influenza B virus, indicating low influenza activity in the Region. Consultation rates for influenza-like illness (ILI) and acute respiratory infection (ARI) are at low levels in all countries in the Region.
EuroFlu weekly electronic bulletin

Human Avian Influenza Updates

The WHO reported a new case of human avian influenza A/H5N1 infection in Indonesia. The case was a 37-year old male from Yogyakarta province who developed fever on July 24, 2012, was hospitalized on July 27 and died on July 30. The epidemiological investigation indicated that the case had 4 pet caged birds in his home, and his home was located about 50 metres from a poultry slaughter house and near a farm. *WHO Avian influenza situation updates*

FluWatch reports include data and information from the following sources: laboratory reports of positive influenza tests in Canada (National Microbiology Laboratory), sentinel physician reporting of influenza-like illness (ILI), provincial/territorial assessment of influenza activity based on various indicators, including laboratory surveillance, ILI reporting, and outbreaks, influenza-associated paediatric and adult hospitalizations, antiviral sales in Canada, and WHO and other international reports of influenza activity.

Abbreviations: Newfoundland/Labrador (NL), Prince Edward Island (PE), New Brunswick (NB), Nova Scotia (NS), Quebec (QC), Ontario (ON), Manitoba (MB), Saskatchewan (SK), Alberta (AB), British Columbia (BC), Yukon (YT), Northwest Territories (NT), Nunavut (NU).

ILI definition for the 2011-2012 season

ILI in the general population: Acute onset of respiratory illness with fever and cough and with one or more of the following - sore throat, arthralgia, myalgia, or prostration which is likely due to influenza. In children under 5, gastrointestinal symptoms may also be present. In patients under 5 or 65 and older, fever may not be prominent.

Definitions of ILI/Influenza outbreaks for the 2011-2012 season

Schools: Greater than 10% absenteeism (or absenteeism that is higher (e.g. >5-10%) than expected level as determined by school or public health authority) which is likely due to ILI. Note: it is recommended that ILI school outbreaks be laboratory confirmed at the beginning of influenza season as it may be the first indication of community transmission in an area.

Hospitals and residential institutions: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case. Institutional outbreaks should be reported within 24 hours of identification. Residential institutions include but not limited to long-term care facilities (LTCF) and prisons.

Other settings: two or more cases of ILI within a seven-day period, including at least one laboratory confirmed case; i.e. workplace, closed communities.

Influenza Activity Levels Definition for the 2011-2012 season

Influenza Regional Activity levels are defined as:

1 = No activity: no laboratory-confirmed influenza detections in the reporting week, however, sporadically occurring ILI may be reported

2 = Sporadic: sporadically occurring ILI and lab confirmed influenza detection(s) with **no outbreaks** detected within the influenza surveillance region†

3 = Localized: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring in **less than 50% of the influenza surveillance region**†

4 = Widespread: (1) evidence of increased ILI* and
(2) lab confirmed influenza detection(s) together with
(3) **outbreaks** in schools, hospitals, residential institutions and/or other types of facilities occurring **in greater than or equal to 50% of the influenza surveillance region**†

Note: ILI data may be reported through sentinel physicians, emergency room visits or health line telephone calls.

* More than just sporadic as determined by the provincial/territorial epidemiologist.

† Influenza surveillance regions within the province or territory as defined by the provincial/territorial epidemiologist.

We would like to thank all the Fluwatch surveillance partners who are participating in this year's influenza surveillance program.

This report is available on the Public Health Agency website at the following address: http://www.phac-aspc.gc.ca/fluwatch/index.html. Ce rapport est disponible dans les deux langues officielles. Pour en recevoir un exemplaire dans l'autre langue chaque semaine, veuillez communiquer avec Estelle Arseneault, Division de l'immunisation et des infections respiratoires au (613) 998-8862.